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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/828,684	MORITA ET AL.	
	Examiner	Art Unit	
	NICHOLAS S. ULRICH	2173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 June 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 11, 14, 16, 18, 23-25, 36 - 40, 47-51, and 55-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 11, 14, 16, 18, 23-25, 36 - 40, 47-51, and 55-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1, 11, 14, 16, 18, 23-25, 36 – 40, 47-51, and 55-58 are pending.

2. Claims 1, 14, 16, and 55 have been amended.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 16, and 55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Each of the claims recites presenting an image and computer detected regions to a first clinician for review and then presenting the modified image to a second clinician to create a diagnosis. There is no mention in the specification of having a first clinician review and then a second clinician create a diagnosis. The specification on pg4 lines 6-9 discusses a smoother workflow between a radiologists and physicians. The specification on pg 9 lines 25-28 discusses that each CAD marker may then provide a visual indication to a reviewing physician that the radiologist has determined. While these passages teach two clinicians, there is no mention of the first clinician reviewing the image and making changes to the identified markers and then presenting the modified image to a second clinician for a diagnosis.

Also, all the claims recite that the second clinician creates a diagnosis from the stored image. There is no mention in the specification of a second clinician making a diagnosis of any kind.

4. Claim1, 16, and 55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 1 recites "wherein the second clinician reviews the stored image and at least one modified uniquely identified marker to create a diagnosis". Claim 16 recites "wherein a second clinician reviews the transferred image file and creates a diagnosis based on the image of the anatomical feature and the modified uniquely identified marker". Claim 55 recites "receiving a diagnosis from the second clinician based upon the second clinician review of the diagnostic image and at least one modified uniquely identified marker". While the specification discusses a smooth work flow between a physician and radiologist, there is no teaching of a second clinician creating a diagnosis from the image.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 16, 18, 23-25, 36, 37, 47, 48, 50, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roehrig et al. (US 2002/0097902 A1) in view of Ema et al. (US 5779634) and Rogers (US 6970587 B1).

In regard to claim 1, Roehrig discloses

presenting the stored image and at least one computer-detected region of pathological interest to a first clinician *(Fig 5)*.

displaying an image of the anatomical feature *(Fig 10 element 1055 and Paragraph 0057 line 5: The annotation map discussed by Roehrig is an anatomical representation of a breast);*

displaying a first indication associated with each marker indicative of the probability that the region of the pathological interest is cancerous as determined by a computer-implemented detected algorithm *(Paragraphs 0055, 0056, and 0065: colors are used to express the probability of cancer for each marker)*;

displaying a second indication associated with each marker indicative of a classification of the region of pathological interest as determined by a computer-implemented detection algorithm *(Paragraph 0009: discussed is two different kinds of markers used to specify information regarding the features of the suspected abnormalities. Discussed are classifying abnormalities as either cluster micro calcifications or mass).*

While Roehrig teaches displaying regions of pathological interest of an anatomical feature, Roehrig fails to show simultaneously displaying with the image a uniquely identified marker corresponding to each computer-detected region of pathological interest.

Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches unique identifiers corresponding to each region of pathological interest *(Column 49 lines 8-22)*.

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the displaying of regions of pathological interest of an anatomical feature taught by Roehrig to include unique identifiers of Ema, in order to obtain displaying regions of pathological interest of an anatomical feature with unique identifiers for each region of pathological interest. It would have been advantageous for one to utilize such a combination in order to reference and label regions of pathological interest, as taught by Ema *(Column 49 lines 12-13).*

While Roehrig teaches presenting the stored image and at least one computer-detected region of pathological interest to a first clinician, they fail to disclose presenting the stored image and at least one modified uniquely identified marker to a second clinician.

Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches presenting the stored image and at least one modified uniquely identified marker to a second clinician wherein the second clinician

reviews the stored image and at least one modified uniquely identified marker to create a diagnosis *(Column 1 lines 38-48)*.

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the presenting the stored image and at least one computer-detected region of pathological interest to a first clinician taught by Roehrig to include presenting to a second clinician of Ema, in order to obtain a method where a first clinician reviews a image and provides the reviewed image to a second clinician. It would have been advantageous for one to utilize such a combination in order for a doctor or second clinician to receive an interpretation report from a specialist (radiologist or first clinician) for later review by the doctor or second clinician, as taught by Ema *(Column 1 lines 38-48).*

Further, Roehrig and Ema fail to explicitly disclose "receiving a user-input command related to at least one uniquely identified markers" and “saving the uniquely identified markers in the stored image”.

However, Rogers discloses a method of receiving a first user-input command that selects one of the identified markers for classification *(Column 22 lines 16 -19: Rogers specify the selection for removal of the marker but it should be understood that this is only one embodiment and the same selection could be used for selecting a marker to add classification data);* and saving the uniquely identified markers in the stored image *(Column 15 line 45 – Column 16 line 6)*.

Roehrig, Ema, and Rogers are analogous art because they are both from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger and Ema to Roehrig invention because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification. One skilled in the art would also be motivated to store the identified markers in the stored image for later viewing and retrieval by a user.

Roehrig, Ema, and Roger fail to disclose modifying the visual appearance of at least one of the uniquely identified markers according to the received user input command. However, Roehrig teaches indication associated with each marker indicative of a classification of the region of pathological interest *(Paragraph 0009 lines 24-30)* and Roger teaches a user selecting classification alternatives *(discussed above)*. Therefore it would be obvious when combining Roehrig, Ema, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

In regard to claim 16 and 51, Roehrig discloses a system for displaying a number of unique locations of pathological interest of an anatomical feature detected by a computer-implemented detection algorithm, the system comprising:

an image of the anatomical feature the image being of a diagnostic quality *(Fig 10 element 1055 and Paragraph 0057 fine 5: The annotation map discussed by Roehrig is a anatomical representation of a breast)*;

While Roehrig teaches displaying regions of pathological interest of an anatomical feature, Roehrig fails to show simultaneously displaying with the image a uniquely identified marker corresponding to each computer-detected region of pathological interest as determined by a computer algorithm and a network connected to the processor and the storage media, over which network a diagnosing clinician accesses the image file comprising the image of the anatomical feature and the modified uniquely identified markers to diagnose a patients condition. Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches unique identifiers corresponding to each region of pathological interest *(Column 49 lines 8-22)* and a network connected to the processor and the storage media, over which network a diagnosing clinician accesses the image file comprising the image of the anatomical feature and the modified uniquely identified markers to diagnose a patients condition *(Column 7 lines 1-5 and 30-41)*. It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the displaying of regions of pathological interest of an anatomical feature taught by Roehrig to include the unique identifiers of Ema invention, in order to obtain displaying regions of pathological interest of an anatomical feature with unique identifiers for each region of pathological interest over a network. It would have been advantageous for one to utilize such a combination

in order to reference and label regions of pathological interest and provide the images to a user over a network, as taught by Ema *(Column 49 fines 12-13*).

While Roehrig teaches presenting the stored image and at least one computer-detected region of pathological interest to a first clinician, they fail to disclose presenting the stored image and at least one modified uniquely identified marker to a second clinician.

Ema teaches displaying computer-detected abnormalities similar to that of Roehrig. In addition, Ema further teaches wherein a second clinician reviews the transferred image file and creates a diagnosis based on the image of the anatomical feature and the modified uniquely identified marker *(Column 1 lines 38-48)*.

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig and Ema before him at the time the invention was made, to modify the presenting the stored image and at least one computer-detected region of pathological interest to a first clinician taught by Roehrig to include presenting to a second clinician of Ema, in order to obtain a method where a first clinician reviews a image and provides the reviewed image to a second clinician. It would have been advantageous for one to utilize such a combination in order for a doctor or second clinician to receive an interpretation report from a specialist (radiologist or first clinician) for later review by the doctor or second clinician, as taught by Ema *(Column 1 lines 38-48).*

Further, Roehrig and Ema fail to disclose "receiving a user-input command that selects one of the uniquely identified markers for classification", "user-input command that selects one of the user- selectable classification alternatives", "modifying the visual

appearance of the displayed marker in response to the classification alternative selected by the user-input command", and "saving the displayed uniquely identified marker with the image of the anatomical feature. However, Rogers discloses a method of receiving a first user-input command that selects one of the identified markers for classification (*Column 22 lines 16 -19: Rogers specify the selection for removal of the marker but it should be understood that this is only one embodiment and the same selection could be used for selecting a marker to add classification data)*; receiving a user-input command that selects one of the user- selectable classification alternatives (*Column 20 line 65 to Column 21 line 8: It should be understood that the operation of pull-down menu's are well known in the art and it is inherently shown in Rogers disclosure that a second user input would be required to select the particular classification from within the drop down menu*); and saving the displayed uniquely identified marker with the image of the anatomical feature (*Column 15 line 45 - Column 16 line 6*). Roehrig, Ema, and Rogers are analogous art because they are from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger and Ema to Roehrig invention because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification. One skilled in the art would also be motivated to store the identified markers in the stored image for later viewing and retrieval by a user.

Roehrig, Ema, and Roger fail to disclose modifying the visual appearance of the displayed marker in response to the classification alternative selected by the second user-input command. However, Roehrig teaches indication associated with each marker indicative of a classification of the region of pathological interest (*Paragraph 0009 lines 24-30)* and Roger teaches a user selecting classification alternatives (discussed above). Therefore it would be obvious when combining Roehrig, Ema, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

In regard to claim 18, Roehrig discloses the system wherein each marker is configured to be electronically stored the same image layer as the image of the anatomical feature in the storage media (*Paragraph 0047 lines 10-12*).

In regard to claim 23, Roehrig discloses the system wherein the Computer-implemented detection algorithm determines a probability of cancer for each region of pathological interest *(Paragraph 0055: output of the classifier sub-stage is usually the probability information of the detected abnormities)*.

In regard to claim 24, Roehrig discloses the system wherein each marker visually indicate the probability of cancer determined by the computer-implemented detection algorithm *(Paragraph 0065)*.

In regard to claim 25, Roehrig discloses the system wherein the color of each marker visually indicates the probability of cancer determined by the computer-implemented detection algorithm *(Paragraph 0065)*

In regard to claim 50, while Roehrig and Ema teach displaying regions of pathological interest on an anatomical feature, they fail to show "the processor is configured to open the stored image file of the anatomical image and the uniquely identified markers such that a clinician may use the processor to open the file and view the image and the markers on the display", "the marker is configured to be saved as a portion of the associated image", and "saving the modified uniquely identified markers in the stored image" as recited in the claims.

Rogers teaches the processor is configured to open the stored image file of the anatomical image and the uniquely identified markers such that a clinician may use the processor to open the file and view the image and the markers on the display, the marker is configured to be saved as a portion of the image, and saving the modified uniquely identified markers in the stored image *(Column 15 line 46 – Column 16 line 7)*.

It would have been obvious to one of ordinary skill in the art, having the teachings of Roehrig, Ema, and Rogers before him at the time the invention was made,

to provide the ability to save a anatomical feature with indicated regions of pathological interest and the ability to open and view the saved file. It is notoriously well known in the art, to provide means for saving and opening files on computer systems. All the above references deal with making annotations using computer systems. It would be obvious to provide a user with the ability to save and open the files with indicated regions.

In regard to claims 36, Roehrig and Ema both fail to disclose wherein the classification of the region of pathological interest is a physiological assessment of the region of pathological interest. Rogers teaches displaying computer-detected abnormalities similar to that of Roehrig and Ema. In addition, Rogers further teaches the classification of the region is a physiological assessment *(Column 20 line 65 to Column 21 line 8);*

Roehrig, Ema, and Rogers are analogous art because they are all from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger, Ema, and Roehrig because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification.

In regard to claim 37, Roehrig discloses wherein the second indication comprises the shape of each marker visually indicating the classification of the region of pathological interest *(Paragraph 0009 lines 24-30: discussed is two different kinds of*

markers used to specify information regarding the features of the suspected abnormalities. Star and triangle).

In regard to claim 47, although Rogers discloses saving to a hard disk, they do not explicitly mention the use of a remote location for saving. It is notoriously well known in the state of the art, though, that remote storage is regularly implemented when saving files. The examiner takes OFFICIAL NOTICE of this teaching. It would have been obvious to one of ordinary skill in the art, having the teachings of Rogers before him, to modify the save to hard disk of Rogers to save to remote location. The motivation would be provide a backup of the file. Also, with rapid growth of the internet, and the ability for users to access data wirelessly from an endless number of locations, it would be advantageous to store the file in a remote location, like a server, in order to allow a physician or patient to retrieve the image from a wireless device by accessing the remote location where the file is stored.

In regard to claim 48, Roehrig discloses wherein the image is of a quality such that the image may be the basis of a diagnostic analysis by a clinician *(Paragraph 0030)*.

6. Claims 11, 38, 39, 40, 49, 55, 56, 57, and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ema et al. (US 5779634), Rogers (US 6970587 B1), and Roehrig et al. (US 2002/0097902 A1).

In regard to claim 55, Ema discloses a method of annotating a diagnostic image comprising the steps of:

acquiring a diagnostic image from a patient *(Column 6 lines 47-50 and Column 7 lines 25-30)*

applying a computer aided diagnosis algorithm to the diagnostic image to identify at least one region of interest *(Column 16 line 59 – Column 17 line 51*);

identifying each region of interest with a uniquely identified marker that is stored in the diagnostic image *(Column 49 lines 8-22)*;

presenting the diagnostic image and at least one uniquely identified marker to a first clinician for review *(Column 1 lines 38-46)*;

receiving an input from the first clinician indicative of the first clinician's interpretation of at least one region of interest *(Column 1 lines 38-46)*;

presenting the diagnostic image and at least one modified uniquely identified marker to a second clinician for diagnosis and receiving a diagnosis from the second clinician based upon the second clinicians review of the diagnostic image and at least one modified uniquely identified marker *(Column 1 lines 47-48)*.

Ema fails to explicitly disclose "receiving a user-input command related to at least one uniquely identified markers" and “saving the uniquely identified markers in the stored image”.

However, Rogers discloses a method of receiving a first user-input command that selects one of the identified markers for classification *(Column 22 lines 16 -19:*

Rogers specify the selection for removal of the marker but it should be understood that this is only one embodiment and the same selection could be used for selecting a marker to add classification data); and saving the uniquely identified markers in the stored image *(Column 15 line 45 – Column 16 line 6)*.

Ema and Rogers are analogous art because they are both from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Rogers to Ema invention because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification. One skilled in the art would also be motivated to store the identified markers in the stored image for later viewing and retrieval by a user.

Ema and Roger fail to disclose modifying the visual appearance of at least one of the uniquely identified markers according to the received user input command. However, Roehrig teaches indication associated with each marker indicative of a classification of the region of pathological interest *(Paragraph 0009 lines 24-30)* and Roger teaches a user selecting classification alternatives *(discussed above)*. Therefore it would be obvious when combining Ema, Roger, and Roehrig to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

In regard to claim 11, Emma discloses wherein each marker is uniquely identified by an alphanumeric label adjacent to the marker *(Column 49 lines 8-22)*.

In regard to claim 38, Ema fails to disclose wherein the viewable classification data includes false positive, cyst, and nodule.

However, Rogers discloses wherein the viewable classification data includes a user-determined classification region as false positive, a micro calcification, a cyst, or a nodule (*Column 20 line 65 to Column 21 line 8, Fig 41, and Column 21 line 4: Classification information can include type of lesion. A cyst, micro calcification, and a nodule can be considered types of lesions)*.

Ema and Rogers are analogous art because they are both from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger to Ema invention because one of ordinary skill in the art would be motivated to allow a user to specify the type of lesion that the marker corresponds to.

In regard to claim 39, while Roehrig teaches a visual indication of classification data *(Paragraph 0009 lines 24-30: discussed is two different kinds of markers used to specify information regarding the features of the suspected abnormalities. Discussed*

are classifying abnormalities as either cluster micro calcifications or mass), Roehrig and Ema fail to teach based on user input.

However, Roger teaches displaying a menu of user-selectable classification alternatives in response to the first user-input command *(Column 21 line 2: pull down menu);*

receiving a second user-input command that selects one of the user- selectable classification alternatives *(Column 20 line 65 to Column 21 line 8: It should be understood that the operation of pull-down menu's are well known in the art and it is inherently shown in Rogers disclosure that a second user input would be required to select the particular classification from within the drop down menu);*

Therefore it would be obvious when combining Roehrig, Ema, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

In regard to claim 40, Ema discloses wherein the step of modifying the visual appearance of the displayed marker comprises adding an alphanumeric indicator to the marker *(Column 49 lines 8-22)*.

In regard to claim 49, Ema discloses comprising transmitting the saved image file to a remote location *(Column 7 lines 1-5 and 30-42)*.

In regard to claim 56, while Ema teaches applying computer aided diagnosis algorithm to a diagnostic image, they fail to show identifying a probability of cancer and classification of each region of interest and modifying the visual appearance of the markers to reflect the probability of cancer and classification as recited in the claims. However, Roehrig teaches identifying a probability of cancer and classification of each region of interest and modifying the visual appearance of the markers to reflect the probability of cancer and classification *(Paragraph 0009 lines 12-30, Paragraph 0065, and paragraph 0066)*. It would have been obvious to one of ordinary skill in the art, having the teachings of Ema and Roehrig before him at the time the invention was made, to modify the computer added diagnosis algorithm taught by Ema to include the probability and classification of Roehrig. It would have been advantageous for one to utilize such a combination as provide visual indications of the regions of interest to a user.

In regard to claims 57 and 58, Ema and Roehrig fail to explicitly disclose "receiving a user-input command related to at least one uniquely identified markers" and “saving the uniquely identified markers in the stored image”.

However, Rogers discloses a method of receiving a first user-input command that selects one of the identified markers for classification *(Column 22 lines 16 -19: Rogers specify the selection for removal of the marker but it should be understood that*

this is only one embodiment and the same selection could be used for selecting a marker to add classification data); and saving the uniquely identified markers in the stored image *(Column 15 line 45 – Column 16 line 6)*.

Ema, Roehrig, and Rogers are analogous art because they are from the same field of endeavor of computer aided abnormality detection in medical imaging. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Roger and Roehrig to Ema invention because one of ordinary skill in the art would be motivated to allow a user to input data associated with each determined abnormality for better classification. One skilled in the art would also be motivated to store the identified markers in the stored image for later viewing and retrieval by a user.

Ema, Roehrig, and Roger fail to disclose modifying the visual appearance of at least one of the uniquely identified markers according to the received user input command. However, Roehrig teaches indication associated with each marker indicative of a classification of the region of pathological interest *(Paragraph 0009 lines 24-30)* and Roger teaches a user selecting classification alternatives *(discussed above)*. Therefore it would be obvious when combining Ema, Roehrig, and Roger to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given marker when altered by a user. It would maintain the aspect of Roehrig invention to display classification data to the user by showing different shapes.

7. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ema et al. (US 5779634), Rogers (US 6970587 B1), Roehrig et al. (US 2002/0097902 A1), and Ozaki et al. (US 2006/0050943 A1).

In regard to claim 14, while Roehrig teaches using a visual indicator of the marker to show classification data *(Paragraph 0009 lines 20-30)*, Roehrig fails to disclose changing the color the visual appearance of marker based on user classification.

While Ema teaches displaying regions of pathological interest on an anatomical figure, Ema fails to disclose changing the color of the visual appearance of the marker based on user input.

While Rogers teaches a user modifying classification data, Rogers fails to disclose changing the color of the visual appearance of the marker based on user classification.

Ozaki teaches displaying regions of pathological interest on an anatomical figure similar to that of Roehrig, Rogers and Ema. In addition, Ozaki teaches representing the classification of region of pathological interest on an anatomical figure using color *(Paragraph 0090)*.

Therefore it would be obvious to one skilled in the art at the time of invention to combine Roehrig, Ema, Roger, and Ozaki to modify the indications associated with the classification of each marker to reflect changes made by user for alternative classifications. The motivation would be to visually reflect the classification of a given

marker when altered by a user. It would maintain the aspect of Roehrig and Ozaki inventions to display classification data to the user by showing visual indications.

Response to Arguments

8. Applicant's argument, see Remarks, filed 6/13/2008, with respect to 35 USC 112 rejection of claim 14 has been fully considered and is persuasive. The 35 USC 112 rejection of claim 14 has been withdrawn.

9. Applicant's arguments filed 6/13/2008 have been fully considered but they are not persuasive.

In regard to claims 1 and 16, applicant argues that none of the cited references would motivate one to create the additional layer of clinician interpretation prior to review by diagnosing clinician. The examiner disagrees. While the limitation "presenting the stored image and at least one modified uniquely identified marker to a second clinician wherein the second clinician reviews the stored image and at least one modified uniquely identified marker to create a diagnosis" is not described in the specification, as indicated above in the 112 rejections, the examiner believes Ema et al. (US 5779634) teaches this motivation. As described by Ema in Column 1 lines 38-48, a first doctor or clinician interprets examination images and provides an interpretation report to a doctor or second clinician. This clearly would motivate one to provide a first layer of interpretation before the second doctor makes there diagnosis of the patient.

In regard to claim 55, applicant argues that Ema teaches away from the interjection of additional review by a clinician or the creation of a CAD system or method that improves and facilitates the review of diagnostic images by multiple clinicians and teaches away from the invention as claimed as the system of Ema presents the CAD interpretation results as an electronic answer key by which the clinician may check his or her own interpretation by comparison, rather than a system that facilitates the clinicians own ability to develop an accurate interpretation upon the clinician review. The examiner disagrees. As described by Ema in Column 1 lines 38-48, a first doctor or clinician interprets examination images and provides an interpretation report to a doctor or second clinician. This clearly would motivate one to provide a first layer of interpretation before the second doctor makes there diagnosis of the patient. Ema's disclosure does not in any way show how the use of computer aided diagnosis can replace the old system as described in Column 1 lines 38-48. Ema's invention is directed towards improving the first doctor's interpretation of the examination images by applying CAD results to the examination images and supplying these results to the first doctor. Therefore Ema does not teach away from the interjection of additional review by a clinician. Therefore, it would be obvious to use known prior art methods, as that described in Column 1 lines 38-48 of Ema, when interpreting examination images with CAD.

All dependent claims 36, 37, 47, 48, 18, 23-25, 50, 51, 11, 38-40, 49, 56-58, and 14 remain rejected for the reasons discussed above in regards to independent claims 1, 16, and 55.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NICHOLAS S. ULRICH whose telephone number is (571)270-1397. The examiner can normally be reached on M-TH 9:00 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Chow can be reached on (571)272-7767. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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8/14/2008
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/Tadesse Hailu/
Primary Examiner, Art Unit 2173